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the first parts of the book were published before that congress, and in these, therefore, a somewhat different nomenclature had been used, but the deviations from the Vienna rules are corrected at the end of the volume.

There is much in the book of great importance to American botanists. Genera like Philadelphus, Cercocarpus, Holodiscus, Spiraea, Prunus, Amelanchier, Crataegus, and other American genera of Saxifragaceae, Drupaceae, Rosaceae, and Pomaceae are exhaustively treated and many valuable notes on the affinities, the systematic value, and the conception of American species are included. It would of course be impossible to give here further details of the author's treatment of American species and of his notes and remarks, nor would it be of much use to select at random a few of them.

The book will prove not only indispensable to every student of cultivated trees and shrubs, but will also be of great importance to every botanist engaged in the study of the American, European, and Asiatic floras. In fact the work will amount almost to a representation of the whole ligneous flora of the temperate and colder regions of the northern hemisphere when it is completed, and it is to be hoped that the following volume or volumes will show the same thorough and careful treatment as the one now before us.—ALFRED REHDER.

Errera Botanical Institute

Two sumptuous volumes have recently appeared, containing the papers originating in this Institute.[2] As a publication the *Recueil* was planned by the late Professor LÉO ERRERA in 1902, and the first four volumes were intended to contain all the work done before that date in the botanical institute of which he was the inspiring director. But of these four only volume 1 is now first published. Volume 5 appeared in 1902 and contained papers prepared in 1900–1901. Volume 6 continues the series, under the editorship of Professor MASSART, the successor of the lamented founder, whose name the institute now bears.

In volume 1 as a frontispiece will be found an excellent photogravure of Professor ERRERA; ground plans of the institute are inserted; there are eleven papers by ERRERA himself, mostly reprinted, bearing on glycogen in the plant kingdom, beginning with his thesis in 1882 and closing with the posthumous and incomplete papers which have already been noticed in this journal.[3] Other reprints are:

The titles of three papers and the text of one, by ÉMILE LAURENT, all dealing with the physiology of yeasts, and another on the formation of starch from organic solutions; GEORGES CLAUTRIAU'S paper (1895) on glycogen in fungi, and another on the hydrocarbon reserves (1899); and N. ENSCH'S researches on glycogen in Myxomycetes (1899).

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[2] Recueil de l'Institut botanique (Université de Bruxelles) publié par L. ERRERA. Tome I, avec cinq planches. Glycogène, amidon et autres réserves non azotées.

Recueil de l'Institut botanique Léo Errera (Université de Bruxelles) publié par JEAN MASSART. Tome VI, avec vingt-sept figures dans le texte et vingt-trois planches.

Bruxelles: Henri Lamertin. 1906. Each *fr.* 25.

[3] BOT. GAZETTE **41**:370. 1906, and **43**:79. 1907.

Volume 6 likewise consists chiefly of reprints, opening with MASSART'S memoir on irritability (1902); MOLLE'S account (1902) of an alkaloid, cliviine in *Clivia miniata* Benth.; ERRERA'S discussion (1903) of the limit of minuteness of organisms, and (1905) of the struggle for precedence and inhibitory action;[4] JOSEPHINE WERY'S experiments (1904) on the attraction of bees by flowers;[5] VAN RIJSSELBERGHE'S physico-chemical paper (1905) on the properties of mixed solutions and the physiological determination of their osmotic pressure; JACQUEMIN'S microchemical study (1905) of the localization of alkaloids in Leguminosae; ERRERA'S incomplete work on hygroscopicity as the explanation of ELFVING'S "physiological action at a distance" (of which more below), and a preliminary note suggesting that the form and development of leaves are related to atmospheric electricity; finally MALTAUX and MASSART'S paper on the chemical stimuli which affect the process of cell division.

ERRERA'S paper on hygroscopicity has been edited by COMMELIN from manuscript written in 1891, at which time ERRERA'S experiments on the curvatures observed by ELFVING in Phycomyces led him to ascribe them to hydrotropism; but these results were not published in full. Lately he had felt that it was necessary to reinvestigate the matter in the light of the new discoveries in radiation, and on this task he was engaged in 1905 at the time of his death. His notes and conclusions, so far as they could properly be used, have been incorporated by the editor; but the paper remains a fragment—yet a valuable one.

The volumes show the tremendous activity inspired by this genial *savant*, whose loss is felt most keenly. It is to be hoped that the Institute will continue its fine record under its new energetic director.—C. R. B.

Water relations of desert plants

LIVINGSTON has issued as publication 50 of the Carnegie Institution an account of studies made chiefly in the summer of 1904,[6] at the Desert Botanical Laboratory. He examined the soil moisture, atmospheric conditions, and the evaporation from water surfaces and plants. These studies are a worthy contribution to the solution of the problem of water relations of plants in the desert, in which many have interested themselves; but the end is not yet.

The soil of Tumamoc Hill, on which the laboratory is situated, was found to have a high retentive power, and to contain, even at the end of the dry season, 12–15 per cent. of water (by volume) at a depth of less than 40^{cm}, an amount quite adequate to the needs of the desert plants. The water penetrates deeply

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[4] See BOT. GAZETTE **41**:221. 1906.

[5] See BOT. GAZETTE **40**:476. 1905.

[6] LIVINGSTON, B. E., The relation of desert plants to soil moisture and to evaporation. Imp. 8vo. pp. 78. *figs.* 16. Publication no. 50. Carnegie Institution, Washington, D. C. 1906. 40 cents.